CLAIMS

1. A method of obtaining distance relationships between nodes in a network comprising a first (A), a second (B) and a third node (C) wherein the second node is within transmission range of the first and the second node, the method comprising,

the third node (C) eavesdropping on a first message (22) being transmitted from the second node (B) to the first node (A).

2. The method as in claim 1, wherein the first message comprises a range request.

3. The method as in claim 1, wherein the first message (22) comprises first timing information and is a response to a range request (21) sent from the first node (A) to the second node (B).

4. The method as in claim 3 further comprising the first node (A) determining the distance between the first node and the second node by considering the time of transmission of the ranging request (T1), the time of arrival of the first message (T4) and the first timing information of the first message.

5. The method as in claim 3 or 4 wherein the first timing information comprises the time of arrival of the ranging request (T2) at the second node and the time of transmission (T3) of the first message from the second node.

6. The method as in claim 3 or 4, wherein the first timing information comprises the time delay between the arrival of the ranging request and the transmission of the first message at the second node (T3-T2).

7. The method as in any one of claim 3 to 6 further comprising the third

node (C) transmitting a second message (24) in response to the first message (22) and the second message (24) comprising second timing information.

8. The method as in claim 7 further comprising the second node (B) receiving the second message (24) and determining the distance between the second device (B) and the third node (C) by considering the time of transmission of the first message (T3), the time of reception of the second message (T7) and the second timing information.

9. The method as in claim 7 or 8 wherein the second timing information comprises the time of arrival of the first message (T5) at the third node (C) and the time of transmission (T6) of the second message from the third node.

10. The method as in claim 7 or 8 wherein the second timing information comprises the time delay between the arrival of the first message at the third node and the transmission of the second message from the third node (T6-T5).

11. The method of claim 7 to 10 wherein the network is a master/slave network, the first node (A) is the master node and the second (B) and third (C) nodes are slave nodes, and wherein the second message (24) is addressed to the master device (A) and the second node (B) receives the second message by eavesdropping.

12. The method of any one of claims 7 to 10 wherein the network is mesh network and said second message (24) is addressed to said second node (B).

13. The method of claim 12 wherein the third device (C) is not within the transmission range of the first device (A).

14. The method of any one of claims 7 to 13 wherein the request (21), the first message (22) and the second message (24) are comprised in a MAC command frame (29-36).

15. The method of any one of claims 7 to 13 wherein the request (21), the first message (22) and the second message (24) each comprise a transaction ID (34) and the transaction ID of the request, the first message and the second message match.

16. The method of claim 16 wherein the transaction ID (34) is selected at random by the first node.

17. The method of any one of claims 7 to 16 wherein the request (21), the first response (22) and the second response (24) are sent according to the IEEE 802.15.4 standard.

18. The method of any one of claims 7 to 17 wherein the network comprises a plurality of nodes (C, D, E) eavesdropping on the first message (22) and sending a plurality of messages (24, 37, 38), the second node (B) receiving the plurality of messages and calculating the distances from the second node (B) to each of the plurality of eavesdropping nodes (C, D, E) and wherein each of the plurality of nodes are assigned a reply period to avoid collision of messages.

19. The method of claim 18 wherein the reply period of each node is assigned in dependence on the power capability of the plurality of nodes.

20. The method of claim 18 wherein the reply period of each node is assigned at random.

21. A device (C) operable as a node in a wireless network having a first (A) and a second node (B) different from said node, the device comprising

means (11) for eavesdropping on a first message (22) being transmitted from the second to the first node; and

timing means (15) for measuring timing information.

22. The device according to claim 21 further comprising a transmitter (11) for transmitting a second message (24) in response to the first message comprising said timing information.

23. The device as in claim 22 wherein the timing information is based on the time of arrival of the first message (T5) and the time of transmission of the second message (T6).

24. The device as in claim 22 or 23 wherein the device is configured to transmit said second message (24) in a time slot assigned to the device by the coordinator (A) node of the network.

25. The device as in claim 22 to 24, wherein the first message (22) comprises a transaction id (34) and the device is configured to include a transaction id (34) in the second message (24) based on to the transaction id of the first message.

26. The device as in any one of claim 21 to 25 wherein the device operates according to the ZigBee standard.

27. The device as in claim 26 wherein the device is configured to accept said first message during its sleep mode.

28. A network comprising a plurality of nodes as claimed in any one of claims 21 to 27.

29. The network of claim 28 comprising a mesh network.

30. The network of claim 28 comprising a master/slave network.

31. A computer readable medium to be used in a wireless network comprising a first node (A), a second node (C) and a plurality of eavesdropping nodes (C, D, E) in direct contact with the second node (B), the computer readable medium comprising instructions for allocating a reply period to each of the plurality of eavesdropping nodes when the second node has transmitted a range response (22) to the first node.

32. A computer readable medium wherein said step of allocating is made in dependence on the power level of each of the plurality of eavesdropping nodes.